

App. No. 09/717,758
Office Action Dated May 18, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Claims 1 and 11-13 are canceled.

Listing of Claims:

1-8. (Canceled)

9. (Previously Presented) A solid-state imaging device, comprising:

a photoelectric conversion region including:

a plurality of photoelectric conversion portions arranged in rows and columns extending in a vertical direction and a horizontal direction; and

a plurality of vertical charge transfer paths extending substantially in parallel to the columns of the photoelectric conversion portions;

a plurality of horizontal charge transfer paths for receiving signals from the respective vertical charge transfer paths; and

a plurality of read-out amplifiers for receiving signals from the respective horizontal charge transfer path,

wherein the plurality of vertical charge transfer paths is arranged at a horizontal pitch A within the photoelectric conversion region, and at a pitch B that is smaller than the pitch A in a portion where the signals are input into the horizontal charge transfer path, the pitch B reducing gradually from the photoelectric conversion region toward the horizontal charge transfer path so that the vertical charge transfer paths are squeezed together,

the read-out amplifier and the horizontal charge transfer path are provided for each section into which the photoelectric conversion region is partitioned along the vertical direction, so as to be provide at a horizontal spacing that is not large than the width of the section,

each of the read-out amplifiers is placed in a space that results from the squeezing of the vertical charge transfer paths, so as to be placed directly adjacent to the last stage of the horizontal transfer path, and

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a plurality of transfer electrodes are arranged above the vertical charge transfer paths such that bent portions of the vertical charge transfer paths are positioned below locations between the adjacent transfer electrodes.

10. (Previously Presented) A solid-state imaging device, comprising:
a photoelectric conversion region including:

a plurality of photoelectric conversion portions arranged in rows and columns extending in a vertical direction and a horizontal direction; and

a plurality of vertical charge transfer paths extending substantially in parallel to the columns of the photoelectric conversion portions;

a plurality of horizontal charge transfer paths for receiving signals from the respective vertical charge transfer paths; and

a plurality of read-out amplifiers for receiving signals from the respective horizontal charge transfer path,

wherein the plurality of vertical charge transfer paths is arranged at a horizontal pitch A within the photoelectric conversion region, and at a pitch B that is smaller than the pitch A in a portion where the signals are input into the horizontal charge transfer path, the pitch B reducing gradually from the photoelectric conversion region toward the horizontal charge transfer path so that the vertical charge transfer paths are squeezed together,

the read-out amplifier and the horizontal charge transfer path are provided for each section into which the photoelectric conversion region is partitioned along the vertical direction, so as to be provide at a horizontal spacing that is not large than the width of the section,

each of the read-out amplifiers is placed in a space that results from the squeezing of the vertical charge transfer paths, so as to be placed directly adjacent to the last stage of the horizontal transfer path,

a plurality of transfer electrodes are arranged above the vertical charge transfer paths, bent portions of the vertical charge transfer paths are positioned below predetermined transfer electrodes; and

a transfer path length on which a transfer driving pulse is applied with said predetermined transfer electrodes is shorter than a transfer path length on which the transfer driving pulse is applied with transfer electrodes that are adjacent to said predetermined transfer electrodes.

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11-13. (Canceled)

14. (Previously Presented) An imaging system, comprising:
the solid-state imaging device of Claim 9; and
a signal processing portion that synthesizes output from the read-out amplifiers of the sections of the solid-state imaging device, and corrects the image at joint portions corresponding to portions where the sections border with one another, so as to display one image.

15. (Previously Presented) An imaging system, comprising:
the solid-state imaging device of Claim 10; and
a signal processing portion that synthesizes output from the read-out amplifiers of the sections of the solid-state imaging device, and corrects the image at joint portions corresponding to portions where the sections border with one another, so as to display one image.